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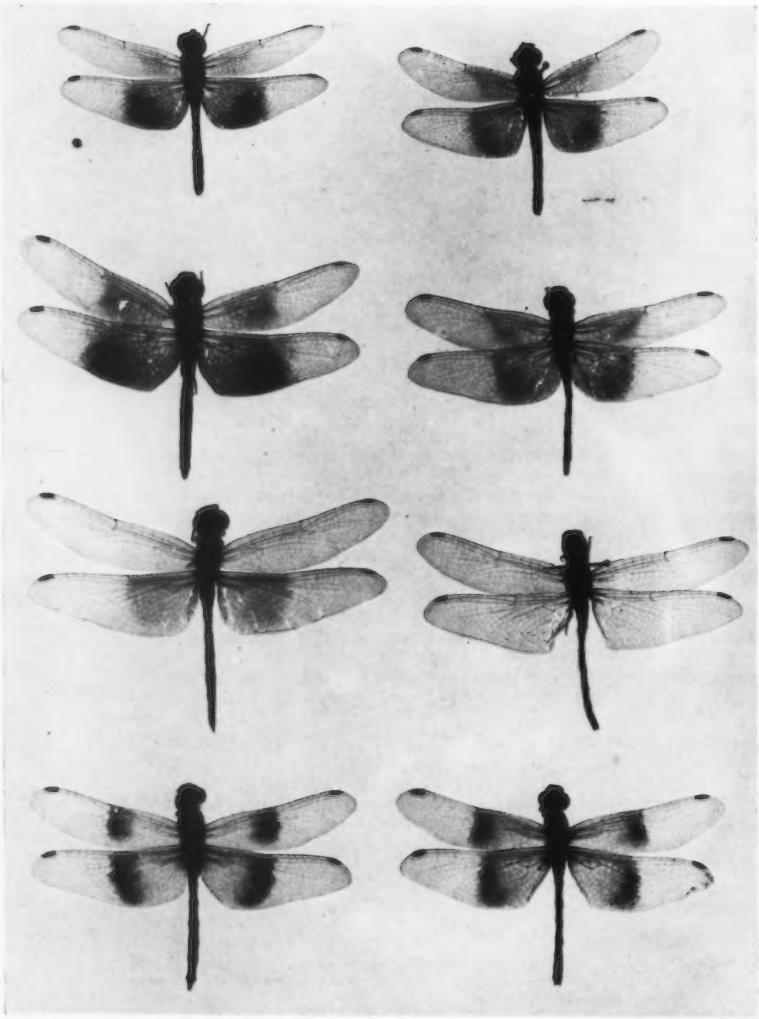
PLATE I



ENTOMOLOGICAL NEWS

VOL. LXII MAY, 1951 No. 5

Sympetrum semicinctum (Say) and its Nearest Allies (Odonata)

By E. M. WALKER, Royal Ontario Museum of Zoology, Toronto

The marked difference in size and color pattern between specimens of *Sympetrum semicinctum* (Say) from eastern and western North America is well known but has received little attention from American students of Odonata. Two European workers, however, Ris and Bartenev, have dealt with this matter at some length. Ris (1911) termed *S. semicinctum* a species of "considerable polymorphism" and suggested that the various forms that he recognized and described probably deserved distinctive names, although he left the naming of them to others. Under the name of *S. semicinctum* Ris recognized two main series or forms, an eastern and a western, the latter form with three subdivisions, distinguished by differences of color pattern and inhabiting distinct geographical ranges. Bartenev (1915) described Ris' western forms collectively as a new subspecies, which he named *S. semicinctum occidentalis*. His description, which is in Russian,* appears to be essentially a translation of Ris' work and includes his descriptive notes on the three subdivisions of this western form. No reference is made to a type

* For a translation of this description my sincere thanks are due to Mr. M. G. Gideonoff of the Royal Ontario Museum.

PLATE I

Sympetrum semicinctum (Say) and *S. occidentale* Bartenev, slightly reduced. Males on the left, females on the right.

Top row: *S. semicinctum*, male, Lake Simcoe, Ontario; female, Kettleby, Ontario. Second row: *S. occidentale occidentale*, male, Chilliwack, B. C.; female, Cultus Lake, B. C. Third row: *S. occidentale californicum*, male, "California"; female, Auburn, Calif. Bottom row: *S. occidentale fasciatum*, male and female, Suffield, Alberta.

specimen, nor could we find any evidence that Bartenev possessed a specimen of his subspecies *occidentalis* although he refers to specimens in his collection of the eastern *S. semicinctum*. We prefer, however, to give Bartenev the benefit of the doubt, and we are therefore retaining his name, with the emended spelling *occidentale,* and are provisionally accrediting this name to his authority. We believe, however, that *S. occidentale* deserves the rank of a species rather than a subspecies.

Having decided to investigate the taxonomy of the *semicinctum* species complex, the writer applied to Dr. J. Speed Rogers, Director of the Museum of Zoology, University of Michigan, Ann Arbor, for permission to study the material in the Williamson collection. In response to this request all of the material in this collection labelled *Sympetrum semicinctum* was immediately shipped to the Royal Ontario Museum of Zoology, and for this prompt and generous co-operation we desire to express our thanks and appreciation.

The Williamson collection contains ample material for the recognition and characterization of the various definable forms in this species complex and their general geographical ranges in the United States. It has been supplemented by the material in the Canadian National Collection at Ottawa and the Royal Ontario Museum at Toronto, which afford additional data on the distribution of the species in Canada.

Ris (1911) made no subdivision of the eastern form of *S. semicinctum* but, as already mentioned, he divided the western form into three groups, differing mainly in the wing pattern and having distinct distributional ranges, viz., (a) Colorado and New Mexico, (b) Nevada and California, and (c) Washington and British Columbia.

The results of our study confirm the findings of Ris both as to the taxonomic divisions of the group and their geographical distribution. We would add the following before discussing the subject in detail:

The eastern form is remarkably uniform throughout its range and shows no tendency to intergrade with any of the western forms. Its distributional range is also distinct and, as far as

our material indicates, does not overlap any of the territory inhabited by the western forms. In general terms the range of the eastern form may be described as the northern half of the United States and adjacent parts of Canada, east of the Great Plains.

The groups comprising the western form are alike in various features in which they differ from the eastern form. The general range of this form is from southern British Columbia and Alberta to South Dakota and southward to California, Arizona and New Mexico.* The three groups into which this form is divisible are not sharply separated but are, on the whole, easily distinguishable.

In view of these findings we see no reason for continuing to regard the eastern and western forms as a single species, even though the structural differences are extremely slight. We would restrict the name *semicinctum* to the eastern form and apply Bartenev's name *occidentale* as the specific name of the western groups collectively. The subdivisions of *S. occidentale* are typical subspecies, each characteristic of its geographical range, but intergrading with the other subspecies where the boundaries of their ranges meet. The exact boundaries of these ranges are as yet unknown.

Key to the species and subspecies of the semicinctum group of the genus Sympetrum

1. Generally smaller (average of 10 ♂♂ and 10 ♀♀; abd., excl. apps., ♂ 17.8, ♀ 17.3, hind wing ♂ 21.5, ♀ 20.3); face darker, olivaceous to brown; sides of thorax without black markings on the pleural sutures and without a black streak in front of the spiracle; trochanters and posterior face of fore femora reddish brown; range northern U. S. and adjacent parts of Canada east of the Great Plains..... .....*semicinctum*

Generally larger (average of 10 ♂♂ and 10 ♀♀ of each subsp.: abd. ♂♀ 21.4, h.w. ♂♀ 25.3); face light yellow (sometimes darkening with age); with distinct black markings on the pleural sutures and with an oblique black stripe in front

* *S. semicinctum* has also been recorded from Oklahoma (Bird, 1932), but we have seen no specimens from this state.

of the spiracle; trochanters and posterior surface of fore femora pale yellow; range U. S. and southern Canada from Pacific coast to Great Plains.....*occidentale* 2

2. Yellow area of wings rarely darkened distally on both pairs of wings and, if so, not forming a transverse band crossing the two wings of each side; range west of the Rocky Mountains.....3

Yellow area of wings proximally pale or relatively pale, distally darkened, forming a transverse band of nearly uniform width across both pairs and ending fairly sharply in a nearly straight or curved line; range, arid or semi-arid plains, chiefly east of the Rocky Mountains, but reaching eastern Utah and N.E. Arizona.....*o. fasciatum*

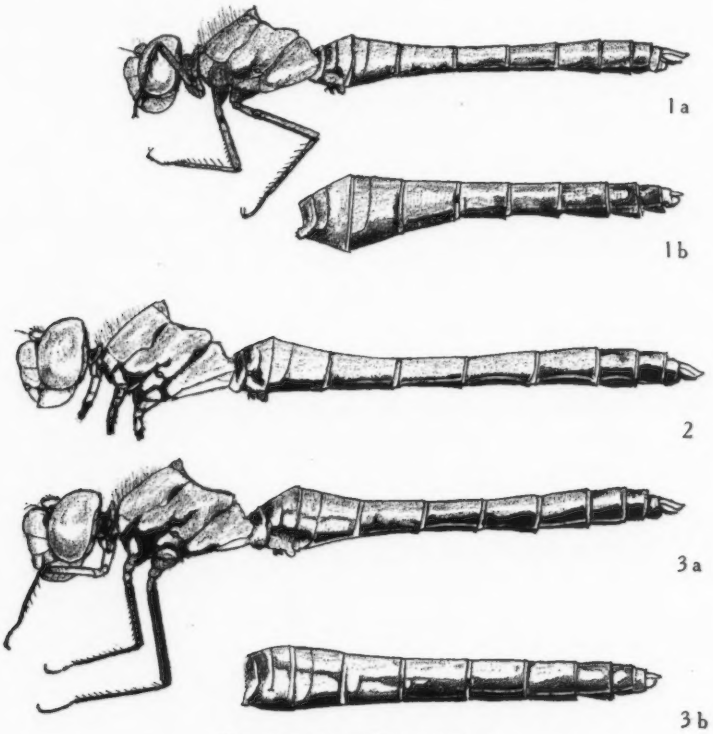
3. Yellow area of hind wings of ♂ extending 1–3 cells beyond nodus, color deepening distally in old ♂♂, in fore wings usually ending abruptly at nodus or only one cell before or beyond; in ♀ reaching nodus in both wings, or 2–3 cells proximal to it in fore wings; color nearly uniform yellow; sides of thorax in old individuals dark yellowish brown, tending to obscure the black markings; range southern British Columbia to Oregon, Idaho and northern Utah.....*o. occidentale*

Yellow area of hind wings of ♂ reaching nodus, not darkening distally; in front wings of ♂ and both pairs of ♀ very pale and diffuse; general body coloration of both ♂ and ♀ paler than the above, the sides of the thorax and basal segments of abdomen turning grayish or greenish with maturity; range California and western Nevada, grading into *occidentale* in eastern Nevada.....*o. californicum*

Sympetrum semicinctum (Say)

The general color is darker and more obscurely marked than in *occidentale*. In mature individuals the only pale yellowish areas are the small marginal spots on the rear of the head and two ill defined spots on the sides of the pterothorax, which often disappear in old males. These yellow spots are margined below with blackish, but there are no clearly defined black markings in the pleural sutures nor above the bases of the coxae, such as are always present in *occidentale*. The abdomen is reddish brown on the basal three segments, becoming distally red in the male, and the black latero-marginal spots on segments 3–6 are more or less discontinuous or absent from the more anterior

segments. The basal area of the wings is as follows: ♂, fore wings pale yellow about as far as the second cell beyond the triangle, fading out diffusely; hind wings colored as far as the nodus or about one cell beyond, the proximal half deep yellow to brown, the distal half darker brown, this shade extending in a broad arc to the anal triangle; ♀, basal yellow area of fore wings deeper and more extensive than in ♂, reaching to within



EXPLANATION OF TEXT-FIGURES

Fig. 1a. *Sympetrum semicinctum* (Say), ♂. 1b. Abdomen, ♀.
Fig. 2. *S. occidentale fasciatum* n. subsp., ♂.
Fig. 3a. *S. occidentale occidentale* n. subsp., ♂. 3b. Abdomen, ♀.

2 or 3 cells of the nodus and more sharply delimited; that of hind wings about as broad as in ♂ but of a more uniform yellow.

Material identified (88 ♂♂, 54 ♀♀): *Nova Scotia:* Annapolis and Halifax counties, VII 31 to IX 30; *New Brunswick:* Gagetown, VIII 9. *Quebec:* Covey Hill, Knowlton, Kazabazua and Wakefield, VII 25 to IX 4. *Ontario:* Middlesex, Welland, Peel, York, Ontario, Bruce, Simcoe, Leeds, Lanark, Renfrew and Carlton counties, Muskoka, Parry Sound and Nipissing districts. Also observed in Rainy River District, VI 19 to IX 24. *Maine:* Orono, Bradley, VII 1 to IX 30. *New Hampshire:* Intervale, IX 16–20. *New York:* Ithaca, VII 24. *Pennsylvania:* Allco.* *Michigan:* St. Joseph, Livingston and Oakland counties, VII 4–12. *Indiana:* LaGrange, Whitley, Huntington and Wells counties, VI 25 to IX 5. *Virginia:* Wythe Co., VI 27. *North Carolina:* Buncombe Co., VIII 23. *Tennessee:* Gatlingsburg, Sevier Co., VII 18.

Records of *S. semicinctum* from Minnesota and Iowa probably belong to this species. There is a male in the Williamson collection labelled "Klamath Co., Oregon, Aug. 10, 1934 (Hubbs)." There is also in this collection a small dark male of *S. o. occidentale* Bart. labelled "Logan Co., Ohio, July 4, 1934, E. B. W. et al." The two specimens look superficially somewhat alike and have doubtless been transposed. Other specimens taken at these same localities on the same dates and by the same collectors support this belief.

We have observed no geographical variation in this species in either size or color pattern. Specimens from Tennessee, Michigan and Nova Scotia, e.g., are entirely similar in every respect. Individual variation in size is about as usual in *Sympetrum*. Measurements of 10 ♂♂ and 10 ♀♀ were as follows: Length ♂ 24.5 to 31.0, ♀ 24.0 to 29.0; abd. (excl. apps.) ♂ 15.0 to 19.5, ♀ 15.0 to 19.0; hind wing ♂ 18.5 to 22.5, ♀ 18.0 to 22.0.

Although generally distributed, *S. semicinctum* appears to be everywhere a rather scarce species, never occurring in large numbers as most of the species of its genus do. This is probably due, in part at least, to its type of breeding place, which is chiefly marshy spots on the course of small, spring-fed streams.

* "Allco" probably stands for Allegheny County.—Ed.

Sympetrum occidentale Bartenev

Although the average size of this species is definitely greater than that of *S. semicinctum,* the smallest individuals are scarcely larger than the average of the eastern species. In young individuals the clear yellow color of the face, sides of the thorax and basal segments of the abdomen, and the definite black thoracic markings, give this species an aspect that is very distinct from that of *semicinctum.* In old specimens the yellow parts may become darkened to a dull ochraceous, greenish or grayish, and the black markings are then less conspicuous, though always discernible. The black latero-marginal spots on segments 3–6 of the abdomen form a more definite and continuous stripe than in *semicinctum.* In the female this stripe is divided anteriorly (seg. 3 and 4) into two, a mid-lateral and a ventro-lateral. This feature is sometimes seen, though less distinctly, in the males. It is not, however, a characteristic of *S. occidentale,* being not infrequently present in females of *S. semicinctum.*

We have found no constant structural differences between the two species. In the males the outer branch of the hamuli tends to be longer and more slender in *occidentale* but this character is by no means constant. A careful comparison of the anal appendages of the male also revealed no reliable differences. The penis likewise appears to be lacking in diagnostic features but we have not sufficient material for an adequate study of this organ.

As Bartenev designated no type of his subspecies *occidentalis,* which we have elevated to the rank of a species, it is necessary to select a type from one of its three subspecies as we now recognize them. We have chosen as the typical subspecies that which is most nearly intermediate between the other two, geographically and perhaps also taxonomically. The type specimens are recorded under this subspecies, *S. occidentale occidentale.*

S. occidentale is an abundant species, apparently with a much wider variety of breeding places than its eastern relative. Whitehouse (1941) states: "While the Harrison Bay district (its smaller lakes and streams) yielded a fine variety of dragonflies,

the great body of water itself seemed in mid-August to be favored only by *semicinctum,* which positively swarmed in mated pairs busy ovipositing." This is a type of habitat entirely foreign to *S. semicinctum.*

S. occidentale Bartenev **occidentale** subsp. n.

This subspecies, when old and darkened, is most like *semicinctum* in appearance. This is seen in the wing pattern as well as the dark body coloration and relative obscurity of the black thoracic markings. These can always be seen, however, and judging from the material at hand the size is constantly larger. Although usually not larger than the other subspecies of *S. occidentale,* it reaches the maximum size for the species in specimens from Chilliwack and Harrison Bay, B. C. Males vary in length from 32.5 to 40.0 mm., ♀♀ 31.0–35.0; abd. (exc. apps.) ♂ 20.0–23.5, ♀ 20.0–24.0; hind wing ♂ 25–28; ♀ 24–26.

Holotype ♂ and *allotype* ♀: New Bridge, Baker Co., OREGON, Sept. 9, 1909 (pair), C. H. Kennedy; in the Williamson collection, Museum of Zoology, Ann Arbor, Mich.

Material identified (34 ♂♂, 53 ♀♀): *British Columbia:* Langford Lake and Departure Bay, Vancouver Island; Abbotsford, Cultus Lake, Chilliwack and Harrison Bay, New Westminster District; Oliver and Osoyoos, Similkameen District; Okanagan Landing, Osoyoos District; Aspen Grove and Mt. Ida, near Salmon Arm, Kamloops District; VII 17 to IX 24. *Washington:* Sunnyside, Yakima Co., VII 24 to VIII 24. *Oregon:* Klamath Co., VIII 10–13; New Bridge and Baker City, Baker Co., IX 9–14. *Idaho:* Pocatello, Bannock Co.; Medimont, Kootenai Co.; Toponz, Lincoln Co.; VI 28 to X 6. *Utah:* Provo; City Creek Canyon; and State Canyon, Provo, 5000', and Vineyard, Utah Co.; Ogden and Farr West, Weber Co.; Hurricane, Washington Co.; VII 14 to IX 14.

Specimens from Farr West and Provo, Utah, show in most cases some reduction or diffusion of the yellow color of the wing bases in the females, as compared with the material from Washington and western British Columbia. Paler coloration of the thorax with a tendency to become grayish with age is also seen in the Utah specimens and in some degree in specimens from

Bannock, Idaho, and the interior of British Columbia, e.g., the Kamloops District. These features are perhaps correlated with a drier climate. They are present in a more marked degree in the following subspecies.

S. occidentale californicum subsp. n.

Ris (l.c.) has given an excellent description of this form, which we translate, with slight modifications, as follows: "The yellow basal areas of the wings are reduced and pale, in the fore wing of the ♂ very pale and extending to about the second cell beyond the triangle, with somewhat stronger yellow streaks in the subcostal and cubital spaces, or reduced to these streaks alone; in hind wing as far as the nodus, golden yellow, somewhat deeper in Sc and Cu, the distal darkening wholly lacking, or reduced to a few brown lines along the veins; ♀ in fore wing as in ♂, in hind wing not reaching the nodus, about 2 cells distad of triangle or, at the minimum, not beyond the triangle, very diffuse to the anal margin, or only to the middle of the loop, or scarcely beyond the membranule." The general coloration of the body is somewhat paler than either of the other subspecies and the thorax and basal segments of the abdomen become grayish or greenish with age, having a slightly pruinose appearance.

Holotype ♂ and *allotype* ♀: American River, Sacramento, CALIFORNIA, July 15, 1914 (pair), C. H. Kennedy; in the Williamson collection, Museum of Zoology, Ann Arbor, Mich.

Material identified (18 ♂♂, 21 ♀♀): *California:* Surprise Valley, Modoc Co.; Auburn, Placer Co.; American River, Sacramento Co.; Laws, Inyo Co.; and a long series from "California" without further data; VII 15 to VIII 28. *Nevada* (including intergrades with subsp. *occidentale*): Humboldt Co.; Pershing Co.; Eureka Co.; Pyramid Lake, Washoe Co.; Nye Co.; Cherry Creek, White Pine Co.; VII 6 to VIII 28.

This seems to be the most variable in size of the three subspecies of *S. occidentale,* and is on the whole the smallest. The series from "California" contains a number of individuals, chiefly females, that are about the same size as average *S. semicinctum.*

Measurements of 10 ♂♂ and 1 ♀♀ from various localities are as follows: Length ♂ 31–37 mm., ♀ 28.0–33.5; abd. (excl. apps.) ♂ 18.5–23.5, ♀ 19.5–22.5; hind wing ♂ 22.5–28.0, ♀ 22–26.

Intergradation with *S. o. occidentale* is found in White Pine, Eureka and Nye counties, Nevada. In the series from White Pine Co., 9 ♂♂ and 15 ♀♀, the females could all be placed almost equally well with *occidentale*. The pale thoracic pleura, which turn grayish in old individuals, are like those of *californicum*, while the yellow area of the hind wings (♀♀) is smaller than in typical *occidentale* but not so diffuse as in typical *californicum*. The males could be placed almost equally well in either subspecies but the yellow (or brown) area of the wings is never distinctly deepened distally as it is in fully mature *occidentale*. Intergradation of the two subspecies in the coastal zone, i.e., between Oregon and California, has not been observed in the limited material from that region.

Sympetrum occidentale fasciatum subsp. n.

This subspecies in its typical form is easily recognized by its wing pattern. The colored area reaches the nodus in the front wings and one or two cells beyond it in the hind wings, and in both pairs the proximal part of this area is pale, or, in old individuals, relatively pale, while the distal part is dark yellow or brown, forming a band of nearly uniform width, crossing both wings from front to hind margin and terminating abruptly in an almost straight line. The pale yellow parts of the thorax and abdomen turn greenish gray in old individuals. The black markings of the thorax tend to be less heavy than in the other subspecies. While *fasciatum* is, on the whole, somewhat less stocky in build than the other forms, with the abdomen relatively a little longer (text-fig. 2), this difference is not constant enough to be useful as a taxonomic character.

The range in size is similar to that of *S. o. californicum*. Measurements of 10 ♂♂ and 10 ♀♀ are as follows: length ♂ 30–37 mm., ♀ 30–34.5; abd. ♂ 18–23, ♀ 20–23; hind wing ♂♀ 23–27.

Holotype ♂ and *allotype* ♀: Grand Co., UTAH, 2 mls., n. of

Moab, June 16, 1937, Leonora K. Gloyd. In the Williamson collection, Museum of Zoology, Ann Arbor, Mich.

Material identified (38 ♂♂, 27 ♀♀): *Alberta:* Suffield; VIII 2. *South Dakota:* Washabaugh Co., 7 mls. s. of Kadoka; VIII 12. *Nebraska:* Halsey and Nebr. National Forest, Thomas Co.; VIII 23. *Kansas:* State Park, Scott Co.; VII 20. *Wyoming:* Fremont Co., 40 mls. e. of Dubois; VII 23. *Colorado:* Clear Creek Co.; Montclair and Berkeley, Arapahoe Co.; Denver; Golden and Morrison, Morrison Co.; Lamar, Prowers Co.; Walsenburg, Huerfano Co.; San Luis Valley, Monte Vista, Rio Grande Co.; Mesa Co., 1.1 ml. n. of Grand Junction; VII 13 to X 10. *Utah:* Fort Duchesne, Uintah Co.; Grand Co., 2 mls. n. of Moab; VI 15 to IX 8. *New Mexico:* Raton, Colfax Co.; Albuquerque, Bernallillo Co.; Las Vegas, San Miguel Co.; VII 15 to X 21. *Arizona:* Apache Co., 22 mls. w. of Eager; VIII 24.

This subspecies thus inhabits the arid and semi-arid plains east of the Rocky Mountains, from southern Alberta to New Mexico, also reaching eastern Utah and northeastern Arizona. Records of *S. semicinctum* from Oklahoma and Texas probably belong to this form.

The only specimens we have seen that give indications of intergrading with other subspecies are those from Rio Grande Co., in southwestern Colorado, viz. 2 ♂♂ and 4 ♀♀ from the San Luis Valley, Monte Vista. These are like *fasciatum* in the clearly defined yellow areas of the wings and in the relatively large size of this area on the front wings, but they differ from typical *fasciatum* in having only slight traces of the dark distal wing bands.

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Some Notes on the Odonata Fauna of Mountain Lake, Virginia

By C. Francis Byers [1]

The scarcity of local lists of Virginia Odonata as well as the prominent role being played by the Mountain Lake Biological Station of the University of Virginia in the study of the natural history of the Southeast, makes it desirable to record known information of the fauna and flora of the area in which it is located.

The Mountain Lake Biological Station is situated in Giles County, in western Virginia, at an elevation of nearly 4,000 feet. The writer was in residence at the Station from July 23 to August 26, 1949, during which time an attempt was made to study the dragonfly fauna of the region. The following account is the result of this study.

Dragonflies are not common in the Mountain Lake area. Neither a large number of species nor a large number of individuals were found. Except for the *Argia, Ischnura,* and *Enallagma* of the less wooded portions of the lake shore and the *Epicordulia* flying over its waters, one seldom saw more than one dragonfly at a time. Collections made at lower elevations, at the ponds and rivers around Blacksburg and Pembroke, showed a somewhat greater variety of dragonflies.

Annotated List [2]

Agrion maculatum Beauvais. 1 ♂, 1 ♀, July 28, 1948, Sinking Creek; 1 ♂, 2 ♀, July 30, 1948, V.P.I. Pond, Montgomery Co. (from the Station Coll.); 3 ♂, 1 ♀, Aug. 10, 1949. Taken along Sinking Creek for a mile above the covered bridge at the foot of Salt Pond Mountain. Sinking Creek is a rapidly flowing, rock bottomed, mountain river.

Argia apicalis (Say). 4 ♂, 3 ♀, August 5, Claytor Lake, Pulaski Co. Taken along clay, pebbly shore, little or no vegetation.

[1] Contribution from the Department of Biology, University of Florida.

[2] Unless otherwise stated all species listed were collected in Giles Co., Virginia, in 1949, and were taken by the author.

Argia moesta putrida (Hagen). 1 ♀, July 27; 2 ♂, July 29; 1 ♂, July 30. Found flying in emergent vegetation along the non-wooded portions of the shores of Mountain Lake, especially the northwest shore, at the Boat House, and the south shore near the Mountain Lake Hotel.

Argia translata Hagen. 1 ♂, July 30, 1948, V.P.I. Pond, Montgomery Co. (from the Station Coll.); 1 ♂, July 30, 1949. In emergent vegetation at south end of Mountain Lake.

Enallagma civile (Hagen). 3 ♂, 2 ♀, July 30, 1948, V.P.I. Pond, Montgomery Co. (from the Station Coll.).

Enallagma exsulans (Hagen). 1 ♂, 1 ♀, July 26; 2 ♂, 1 ♀, July 29; 2 ♂, July 30; 1 ♂, Aug. 15. Collected from emergent vegetation along the northwest and south shores of Mountain Lake, at the Boat House and Hotel docks, respectively. The male on Aug. 15 was found in a spider web.

Ischnura verticalis (Say). 2 ♂, 2 ♀, July 26; 1 ♂, 1 ♀, July 29; 2 ♂, 3 ♀, July 30; 2 ♂, Aug. 5. Found flying with *E. exsulans* in emergent vegetation along northwest and south shores of Mountain Lake.

Lanthus albistylus (Hagen). 16 nymphs, nearly fully grown, were collected by Mr. Chester Mann, August 11, at White Pine Lodge. Mr. Mann describes the habitat as, "Pools, 10 feet wide, 4.5 inches deep. Clear water, sand bottom with pebbles, rubble and bowlders. Scant vegetation. Odonata in debris at bottom of the pool." The author saw several adults among the rocks and trees at the north end of Mountain Lake which were probably of this species—none were taken.

Boyeria vinosa (Say). 2 ♂, Aug. 10 (collected by R. E. Bellamy); 1 ♀, Aug. 20. Sinking Creek near the covered bridge.

Anax junius (Drury). 1 ♂, Aug. 6, 1948, Pembroke (from the Station Coll.).

Aeschna umbrosa Walker. 1 fully developed nymph collected by Chester Mann, July 27, at the head of Little Stony Creek. On August 10, the author saw an adult *Aeschna* caught in the up-air currents on top of Bald Knob at an elevation of 4,400 feet. On another day an *Aeschna* was seen flying along a narrow, heavily wooded trail leading to Rattle Snake Rock. Neither of these specimens were captured.

Cordulegaster diastatops (Selys). 3 large and 2 small nymphs were collected by Chester Mann on August 11 at White Pine Lodge, along with specimens of *Lanthus albistylus,* in clear water pools. A small nymph was taken from a sphagnum bog at the head of Little Stony Creek on July 27. An adult female of this genus was observed laying eggs in the Station swimming pool on August 1.

Epicordulia princeps (Hagen). 1 ♂, 1 ♀, Aug. 11. One of the more common and difficult species to capture. Found darting along the shore and flying over the open water of Mountain Lake. Also, observed at the station swimming pool.

Somatochlora tenebrosa (Say). 1 ♀, Aug. 15. Captured while hovering at the base of emergent reeds in a small sphagnum pool near the first cottage along the road leading into the Station grounds. A male and a female were observed at this pool the day before but were not taken. Two *Somatochlora* nymphs were taken by Chester Mann in a somewhat similar habitat at the head of Little Stony Creek on July 27. They may be of this species. In a letter to Dr. I. F. Lewis, in the Station files, Dr. James G. Needham mentions taking several nymphs in trash along the east shore of Mountain Lake which he identified as *S. elongata.* Dr. E. M. Walker (1925) [3] records 1 ♀ of *S. tenebrosa* collected at Mountain Lake on August 25, 1899.

[3] The North American dragonflies of the genus Somatochlora. University of Toronto Studies, No. 26, page 106.

Celithemis elisa (Hagen). 1 ♂, 1 ♀, July 30; 1 ♂, 1 ♀, Aug. 11. Fairly common in the tall grass and low bushes near the south shore of Mountain Lake on the Hotel grounds.

Perithemis tenera (Say). 1 ♂, July 30, 1948, V.P.I. Pond, Montgomery Co. (from the Station Coll.).

Libellula luctuosa Burmeister. 1 ♂, 1 ♀, July 30, 1948, V.P.I. Pond, Montgomery Co.; 1 ♀, Aug. 5, 1949, Claytor Lake, Pulaski Co.

Libellula lydia Drury. 2 ♂, Aug. 7. Found flying near the swimming pool and on the Station grounds.

Libellula pulchella Drury. 1 ♂, Aug. 9. Collected from low vegetation in cut-over area back of the Station swimming pool.

Pachydiplax longipennis (Burmeister). 2 ♂, July 30, 1948, V.P.I. Pond, Montgomery Co.; 1 ♂, Aug. 6, Pembroke (from the Station Coll.).

Erythemis simplicicollis (Say). 1 ♀, Aug. 7. Flying near the swimming pool on the Station grounds.

Note

In the files located in the library of the Mountain Lake Biological Station there are two notes and a written list giving names of species of Odonata collected at Mountain Lake and vicinity. I have not seen the specimens upon which these lists are based. They may be summarized as follows:

1. Letter from James G. Needham to I. F. Lewis, date July 11, 1931, giving names of dragonflies collected on Mountain Lake as follows: *Argia apicalis, Argia sedula, Enallagma exsulans, Somatochlora elongata* (nymph), *Aeschna* (nymph).

2. A note on dragonflies collected by Mary E. Davis at Farrior Farm, Giles Co., May 7, 1938, as follows: *Enallagma civile, Ischnura verticalis, Gomphus lividus, Macromia* sp.

3. A written list of dragonfly names. Source unknown to the author.

A New Species of Uroxys from Peru (Coleoptera: Scarabaeidae)

By Mark Robinson, Research Associate, Department of Insects, The Academy of Natural Sciences of Philadelphia

(*Continued from page 140*)

Length, 7.5 to 9.1 mm.; breadth, 3.7 to 4.4 mm.

Type. Male major; Yanamonte, La Mar, Ayacucho, Peru. September 20, 1941 (F. Woytkowski). [In the collection of the author.]

Allotype. Female; with the same data as the type. [In the collection of the author.]

Paratypes. 3 males, 10 females; with the same data as the type. Paratypes are deposited in the collection of the Academy of Natural Sciences, Philadelphia; A. Martinez, Buenos Aires, Argentina; O. L. Cartwright, Washington, D. C. and in the collection of the author. The specimens used to describe the above species were presented to the author through the kindness of E. D. Quirsfeld.

Current Entomological Literature

COMPILED BY R. G. SCHMIEDER.

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

This list gives references of the year 1950 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Anon.—Leland Ossian Howard, 1857–1950 (Obituary). [37] 43: 958–62, portrait. **Chow, C. Y., T. C. Huang and T. F. Yue**—Bibliography of Chinese Arthropods of medical and veterinary importance. [Quart. Jour. Taiwan Mus.] 3: 157–85. **Dobzhansky, Th.**—The science of ecology to-day. (A review of Allee *et al.*: Principles of Animal Ecology. Saunders & Co., Phila., 1949.) [75] 25: 408–09. **Dowdy, W. W.**—Further ecological studies on stratification of the arthropods. [26] 32: 37–52. **Dresner, E.**—The toxic effect of Beauveria bassiana (Bals.) Vuil, on insects . [45] 58: 269–78. **Haupt, H.**—Rekonstruktionen permokarbonischer Insekten. [Beiträge z. tax. Zool.] 1: 25–43. **Hering, E. M.**—Monophagie und Xenophobie. Die Nahrungswahl phytophager Insekten und die geographische Herkunft ihrer Wirtspflanzen. [Die Naturwiss.] 37: 531–36. **Holdenried, R., F. C. Evans and D. S. Longanecker**—Host-parasite-disease relationships in a mammalian community in the central coast range of California. [25] 21: 1–18. (Acarina, Siphon., Hemip., Anopl., Malloph., Dipt.), 1951. **Key, K. H. L.**—A critique of the phase theory of locusts. [75] 25: 363–407. **Laird, M.**—Lepidopterous eggs and larvae from the exterior of aircraft fuselages. [53] 166: 1081. **Lesse, H. de**—Notes zoologiques et botaniques sur l'ouest du Groenland. [La Terre et la Vie] 97: 175–201. **Manton, S. M.**—The evolution of the locomotor mechanisms of the Arthropoda. [Proc. Linn. Soc. London] 162: 22–23. **McElvare, R. R.**—Grace Herreshoff Sperry (Obituary). [18] 46: 21, 1951. **Mortenson, E. W.**—The use of sodium

hypochlorite to study Aedes nigromaculis embryos. [52] 10: 211–12. **Orfila, R. N.**—Doctor Filipo Silvestri (1873–1949) (Obituary). [Rev. Soc. Ent. Argent.] 14: 320–26. **Perry, W. J. and A. P. Webster**—Simple high altitude observation chamber for the study of insect physiology. [52] 10: 209–11. **Rao, D. Seshagiri**—A simple type of insect olfactometer. [Indian Jl. Ent.] 11 (1949): 71–75. **Ratkovich, M.**—Primera lista de insectos Tucumanos utiles. [Publ. Misc., Estac. Exp. Agric. Tucuman] pp. 1–33, 1950. **Schneirla, T. C.**—The relationship between observation and experimentation in the field study of behavior. [Ann. N. Y. Acad. Sci.] 51 (6): 1022–44. **Stroud, C. P.**—A survey of the insects of White Sands National Monument, Tularosa Basin. [1] 44: 659–77. **U.S.N.M.**—Report of the U. S. Nat. Mus. for the year ending June 30, 1950. Dept. Zool., Accession of insects, p. 26. Smithsonian Inst., Washington, D. C. **Vibe, C.**—Some insects new to Greenland. [Ent. Meddelelser] 25: 419–20. Homop., Trich., Lep., Dipt., Col.)

ANATOMY, PHYSIOLOGY, MEDICAL—Allegret, P.—Influence de la rétention expérimentale de la soie sur la métamorphose de Bombyx mori (Lép.). [C. R. Acad. Sci.] 232: 268–70, 1951. **Barth, R.**—Die männlichen Duftorgane von Papilio polystictus Btlr. und proneus Hbn. (Lep.) zugleich ein Beitrag zum feineren Bau der Duftschuppen. [102] 21: 513–35. **Beermann, W.**—Chromosomenkonstanz bei Chironomus. [Die Naturwiss.] 37: 543. **Briones, M. H.**—Tumores y alimentacion. I. Efectos de las variaciones en la dieta de levadura sobre tumores melánicos de la Drosophila melanogaster. [Biologica, Santiago de Chile] Fasc. 8–11: 55–67. **Brncic, D.**—Un nuevo tumor hereditario de la Drosophila melanogaster, tu^{49h}. [Biologica, Santiago de Chile] Fasc. 8–11: 69–81. **Cloudsley-Thompson, J. L.**—The water relations and cuticle of Paradesmus gracilis (Diplopoda). [74] 91: 453–64, ill. **Chow et al.**—Medical arthropods. (See under General.) **Davies, L.**—The hatching mechanism of muscid eggs (Dipt.). [40] 27: 437–45. **De Meillon, B. and F. Hardy**—Fate of Cimex lectularius on adult and baby mice. [53] 167: 151–52, 1951. **Drilhon, A. et R. G. Busnel**—Les acides aminés libres et les substances fluorescentes du sang et du tube de Malpighi de la chenille de Bombyx mori (Lepid.). [C. R. Acad. Sci.] 232: 182–84, 1951. **Drilhon, A., R. G. Busnel et C. Vago**—Les acides aminés et les substances fluorescentes du sang, et des tubes malpighi, de la chenille de Bombyx mori L. [C. R. Acad. Sci.] 232: 360–61, 1951. **Dupuis, C.**—Allochromie liee aux

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Micks, D. W.—The laboratory rearing of the common fowl tick Argas persicus. [46] 37: 102–05, 1951. **Newell, I. M.**—New species of Copidognathus (Halacaridae). [2] No. 1476: 1–19, ill. **Schubart, O.**—Diplopoda. (See under Hymenoptera.) **Soares, B. A. M.**—Sôbre o coração o sistema nervoso estômato-gástrico e a circulação cardíaca nos escorpiões do gênero Tityus. [Zoologia, S. Paulo] No. 15: 239–64, ill. **Traver, J. R.**—Unusual scalp dermatitis in humans caused by the mite, Dermatophagoides (Acar., Epidermopt.). [65] 53: 1–25, ill., 1951. **Turk, F. A.**—Myriopodological notes. III. The iatro-zoology, biology and systematics of some tropical "myriopods." [6] ser. 12, 4: 35–48, 1951. **Wharton, G. W., D. W. Jenkins, J. W. Brennan, H. S. Fuller, G. M. Kohls and C. B. Philip**—The terminology and classification of Trombiculid mites (Acarina). [46] 37: 13–31 (k), ill., 1951.

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Review

Pierre Viette. Lépidoptères Rhopalocères de l'Océanie Française; Faune de l'Empire Français, XIII. 1950.

This is the very highest type of what might be called the stamp collector's approach to the butterflies. It is well organized, perfectly clearly presented, with keys, good figures, including genitalia when useful, and all the data necessary to determine the butterflies from the French islands of the southwest Pacific —but hardly anything more. The prospective field collector will miss data on caterpillars, foods, life cycle and ecology; the zoogeographer will have to make his own tabulations, based on other works; for the distributions cited are practically limited to material from the French islands, and outside localities are not quite trustworthy. There is also no synonymy, and one will be occasionally puzzled to find the species in other works.

A rough count shows 42 species actually reported from New Caledonia and 43 from the New Hebrides, with a few more known from both the Loyalties and the New Hebrides, which ought to occur in New Caledonia. There are ten from Tahiti, five from the Marquesas and only scattering records of wide-

spread species from the remaining islands. The endemics are about as one might expect: a few from New Caledonia, including the endemic genus Paratisiphone, none that I notice from the New Hebrides, though there are some striking subspecies of wide-spread species; two from the Marquesas and somewhat surprisingly an endemic genus of Blues from Tahiti (Hypojamides). It is notable that all save those from New Caledonia are represented by very few specimens—the Tahiti species by two specimens taken a century apart, the two Marquesans by a unique and three females. It looks as though a few may yet be found, but more probably several are gone forever before discovery.

Type localities are cited without question, and it should be noted that "Coromandel" is often one of the notorious early false localities. *Delias ellipsis* is cited without question from "Australia," but Talbot notes that the types are labelled "Antipolo," a place which does not exist in Australia; perhaps there is or once was a village of that name in the New Caledonia group. In any case the newly discovered specimen from New Caledonia is the first trustworthy record of the species from anywhere, and of this wide-spread genus from New Caledonia.

"Danaus plexippus" is noted without synonymy, and only a close reading shows that the American Monarch is meant rather than the Asiatic species which Linnaeus confused with it, and which has fought for the name ever since. To add to the confusion it is given as subgenus Danaus, which is correct for the Asiatic, but not so good for the American species (*Diogas* d'Almeida).

Libythea is put in the Nymphalinae, following Zerny and Beier, without noting that while the palpi are not too important, the genus also has Erycinid and not Nymphalid legs, and an unique larva. Surely it deserves at least a subfamily (or a "splitter's" family).—Wm. T. M. Forbes.

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